

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
7 July 2005 (07.07.2005)

PCT

(10) International Publication Number
WO 2005/061394 A1

(51) International Patent Classification⁷: **C02F 1/461**

791-250 (KR). **KIM, Heung-Rak** [KR/KR]; 103-902 Han-shin Apt., 557 Hwangsung-dong, Kyungjoo, Kyungsang-book-do 780-130 (KR).

(21) International Application Number:
PCT/KR2004/003374

(74) Agent: **C & S PATENT AND LAW OFFICE**; C-2306 Daelim Acrotel, 467-6 Dogok-dong, Kangnam-gu, Seoul 135-971 (KR).

(22) International Filing Date:
21 December 2004 (21.12.2004)

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: Korean

(26) Publication Language: English

(30) Priority Data:
10-2003-0094867
22 December 2003 (22.12.2003) KR

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): **RE-SEARCH INSTITUTE OF INDUSTRIAL SCIENCE & TECHNOLOGY** [KR/KR]; San 32, Hyoja-dong, Nam-ku, Pohang, Kyungsangbook-do 790-330 (KR).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **JUNG, Woo-Chul** [KR/KR]; 110-204 Daelim Apt., Younil-eup, Nam-ku, Pohang, Kyungsangbook-do 790-885 (KR). **KIM, Kwang-II** [KR/KR]; 1-302 Seungri Apt., Jigok-dong, Nam-ku, Pohang, Kyungsangbook-do 790-390 (KR). **KIM, Young-Deog** [KR/KR]; 207-1304 Joogong Apt., Changpo-dong, Book-ku, Pohang, Kyungsangbook-do

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: APPARATUS AND METHODS FOR TREATING BALLAST WATER BY USING ELECTROLYSIS OF NATURAL SEAWATER

(57) Abstract: An Electrolysis-type apparatus for treating ballast water using NaOCl and a method thereof is provided. The apparatus includes: a ballast tank; an electrolyzer; a first circulation pump; a second circulation pump; and a controller. The ballast tank is installed in a ship to store seawater. The electrolyzer is connected with the ballast tank and electrolyzes the seawater. The circulation pumps are installed to allow the ballast water to flow into the electrolyzer and to discharge the electrolyzed water containing NaOCl to the ballast tank. The controller supplies power to the electrolyzer so as to control a NaOCl density and controls the circulation pumps. The apparatus and the method safely treat the seawater. Thus, environment pollution and ecosystem destruction can be minimized.



WO 2005/061394 A1